MDS-B3/B4P

US Model
Canadian Model
AEP Model
UK Model

Photo : MDS-B3

SPECIFICATIONS

General

Power requirements	AC 120 V, 60 Hz (For the U.S.A. and Canada) AC 220 V to 240 V, 50/60 Hz (For Europe)
Power consumption	25 W
Operating temperature	5°C to 40°C (41°F to 104°F)
Storage temperature	–20°C to +55°C (–4°F to 131°F), without moisture condensation
Dimensions (w/h/d)	About 142 × 132 × 375 mm (5⅝ × 5¼ × 14⅞ inches)
Weight	About 5 kg (11 lb)

Laser characteristics

Laser:	Semiconductor laser
Wavelength:	780 - 790nm
Laser diode properties	Material: GaAlAs Emission duration: continuous Laser output: less than 44.6 µW (This output is the value measured at a distance of 200 mm from the lens surface on the optical pick-up block.)

Digital audio signal format

System	MiniDisc digital audio system
Disc	MiniDisc
Modulation format	EFM (Eight-to-Fourteen Modulation)
Digital audio channel	2 channels
Sampling frequency	44.1 kHz
Error correction	ACIRC (Advanced Cross Interleave Reed Solomon Code)
Rotation mode	CLV (about 400 to 900 r.p.m.)

Model Name Using Similar Mechanism		MDS-B1/B2P
Mechanism Type	MDS-B3	MDM-1D
	MDS-B4P	MDM-1E
Base Unit Type	MDS-B3	MBU-1A
	MDS-B4P	MBU-1B
Optical Pickup Block Type		KMS-140C

Input/output connectors

Analog input (MDS-B3 only)

Connector	XLR-3-31
Reference level	+4 dBs (factory set)
Adjustable range	–12 dBs to +8 dBs
Maximum level	+24 dBs
Input impedance	Approx. 10 kilohms, balanced

Analog output

Connector	XLR-3-32
Reference level	+4 dBs (load impedance 10 kilohms) (factory setting)
Adjustable range	–12 dBs to +8 dBs (load impedance 10 kilohms) (factory setting)
Maximum level	+24 dBs (load impedance 10 kilohms) (factory setting)
Output impedance	Approx. 250 ohms, balanced
Load impedance	More than 600 ohms

Digital input (MDS-B3 only)

Connector	RCA PHONO
Format	IEC958 digital audio interface (professional/consumer use)
Input impedance	75 ohms, unbalanced
Lock range	±0.1%

— Continued on next page —

MD RECORDER/PLAYER

SONY

Digital output

Connector	RCA PHONO
Format	IEC958 digital audio interface (consumer use)
Output impedance	75 ohms, unbalanced

REMOTE (25P)

Connector	D-SUB 25-pins (female)
Format	Parallel
Input level	L: ground short (less than 100 ohms) H: open collector (high impedance)
Output level	L: less than 0.8 V (Imax.: 50 mA) H: open collector (Vmax.: 12 V)
+5 V output	Imax. 100 mA

RS-232C

Baud rate	Max 9600 baud (1200 baud/2400 baud/4800 baud/9600 baud, changeable by key operation)
Word length	Length 7 bits/Length 8 bits, changeable by key operation
Stop bit	Stop bit 1/Stop bit 2, changeable by key operation
Parity	Parity Odd/Parity Even/Parity Off, changeable by key operation

Audio characteristics

Frequency response	20 Hz to 20 kHz, ±0.5 dB
Signal-to-noise ratio	More than 83 dB (with A-weight filter, when playing back recordable disc) More than 95 dB (with A-weight filter, when playing back premastered disc)
Total harmonic distortion	Less than 0.095% (at reference level[1]), 1 kHz, when playing back recordable disc) Less than 0.06% (at reference level[1]), 1 kHz, when playing back premastered disc)
Wow and flatter	Below measurable limit (±0.001%, W. Peak)

Supplied accessories

Wired remote controller RM-DC1 (1) ※
Connecting cable (1) ※
Sony SUM-3 (NS) batteries ※
AC power cord (1)
Operation manual (1)
※ : MDS-B3 only

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[1] The reference level is the level at –20 dB from the full bit on the peak level meter scale.

Design and specifications are subject to change without notice.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

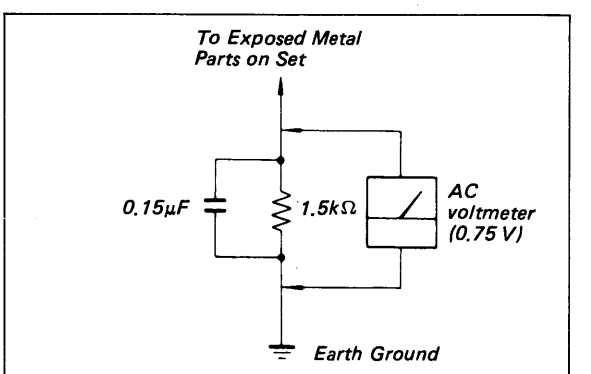


Fig. A. Using an AC voltmeter to check AC leakage.

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.

The following caution label is located inside of the unit.

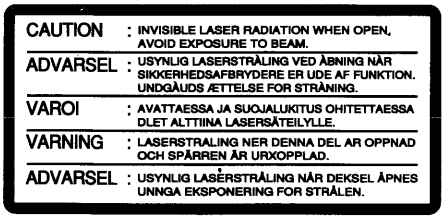

CAUTION : INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
ADVARSEL : USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅUDS ÆTTELSE FOR STRÅNING.
VAROI : AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA LASERSÄTEILYLLE.
VARNING : LASERSTRALING NER DENNA DEL AR OPPNAD OCH SPÄRREN ÄR URXOPPLAD.
ADVARSEL : USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNNGA EKSPONERING FOR STRÅLEN.

TABLE OF CONTENTS

1. GENERAL 5

2. DISASSEMBLY

2-1. Cabinet 33

2-2. DISP Board, LED Board, JACK Board 33

2-3. CN Board, 232C Board 34

2-4. Power Supply Block 34

2-5. Rear Panel 35

2-6. DIG Board, ADDA Board, BUF Board 35

2-7. Mechanism Deck 36

2-8. RF Board 36

2-9. Base Unit 37

2-10. Loading Motor Assy 37

2-11. Sled Motor 38

2-12. Mini Disc Device (KMS-140C) 38

SERVICING NOTE

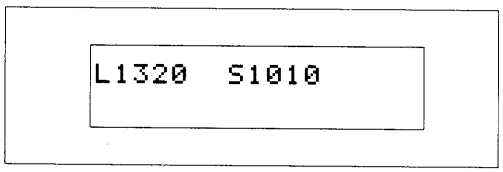
1. MAINTENANCE SCHEDULE

• Maintenance Procedures

In order to achieve the above purposes, the replacement of consumable parts, the cleaning of other mechanical parts, and the check and adjustment of the electrical system are periodically carried out. For the execution time, it is advisable to use a reading of the HOURS METER in the display menu or to acquire the time using a personal computer via the RS-232C. Depending on the reading of the head hours meter, the guidelines for maintenance and check as well as parts to be replaced are listed below. Note that the frequency for replacing each part is based on its life estimated on the experience, but it may be changed from future data.

Part Name (Part No.)	Reading of Hours Meter and replacement interval
DEVICE, MINI DISC KMS-140C (8-583-005-11)	Replace the pickup every 1,500 hours.
CHASSIS (BU) COMPLETE ASSY (A-4660-222-A)	Replace the spindle motor every 3,000 hours.
BELT (LOADING) (4-957-797-01)	Replace the loading belt every 3,000 hours.

The hours meter showing the accumulated operating times appears.



L: Accumulated laser diode operating time.
S: Accumulated spindle motor operating time.

Refer to the L value for replacing the pickup, and the S value for replacing the loading belt and spindle motor.
For the model MDS-B4P (playback only machine), the L value is kept to "0000".

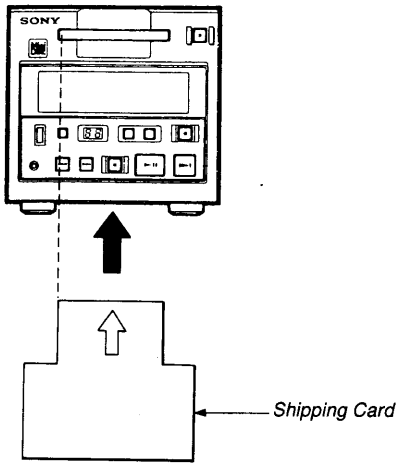
NOTE: • For indication of Hours meter, see page 29 (7-5. Reading the Hours Meter).
• When replacing the KMS-140C, adjust the Focus gain and Tracking gain adjustment.
• For the acquisition of time using a personal computer via the RS232C, refer to the "HOUR METER SENSE" on page 76.

2. SHIPPING MODE

• After service work is finished, be sure to set the disc chucking mechanism in the shipping mode.

• To set the machine in the shipping mode.

1. Turn the unit ON.



2. Align shipping card (3-702-670-01) against the left side of the disc compartment, then insert it. (The motor starting sound will be heard.)
3. After you hear the motor start up, withdraw shipping card.
4. Turn OFF the unit while ⌜TOC Reading⌟ appears in the display window. (The shipping mode is automatically released when the power switch is turned on next time.)

1-1 Features

1-1-1 Features of the MiniDisc Recorder

ATRAC (Adaptive Transform Acoustic Coding) data compression technology

By eliminating inaudible sound data to obtain a compression ratio of 1:5, ATRAC data compresion technology enables the recording of sound information of almost the same quality and quantity as a CD, but on a smaller disc.

74 minutes of playback or recording (Recording mode is the MDS-B3 only)

A single MD can be used to play back or record up to 74 minutes of sound information, far exceeding the capacity possible with IC memories.

Direct track access

You can use the supplied remote controller to directly access any of 255 MD tracks, without the long cuing time required for tape.

Various playback functions

The MDS-B3's various playback functions include repeated playback of tracks and programmed playback of tracks.

Multiple editing functions (MDS-B3 only)

The MDS-B3's editing functions allow you to divide, combine and move tracks, as well as monitor the sound while dividing tracks. Unlike tracks on analog cassette tape, specific MD tracks or an entire MD can be erased instantly.

Text entry (MDS-B3 only)

You can use the supplied wire-connected remote controller to enter text to create titles for recorded discs and tracks. Titles, which may be as long as 100 characters per title and totaling 1,792 characters per disc, appear in the display window during playback.

Durability

Because the MDs use a non-contact system like compact discs, they are superior to the cassette tape in durability.

1-1-2 Operational Features

AUTO PAUSE function

You can use the AUTO PAUSE function to place an MD in playback pause at the beginning of a track, then press the PLAY/PAUSE key to start playback. Use this function to pre-cue tracks during on-the-air broadcasting with multiple MD recorders.

AUTO CUE function

When the AUTO CUE function is on, the MD recorder enters playback pause when it detects a rise in the audio signal (above –54 dB) following the inaudible portion at the start of a track.
This function is effective for delivering special sound effects in theater productions, etc.

Playback display variations

While entering a track title, you can use a semicolon to divide the title, then display each part separately during playback by pressing the DISPLAY key. By holding down the DISPLAY key, you can also display the remaining playing time of the track alternately with the track title or elapsed playing time (auto display function).

LevelSync setting function (MDS-B3 only)

LevelSync setting is essentially the adding of track numbers at specified points while recording. Track numbers can be added automatically or manually.

End-of-message (EOM) indication

The display indication flashes when that the end of the track approaches (EOM indication). You can specify flashing to start at between 1 and 35 seconds before the end of the track.

This section is extracted from instruction manual.

1-1 Features

Hours meter

The hours meter displays the accumulated time of laser diode recording operations and spindle motor operation. Use this information as the basis for replacing the BU block.

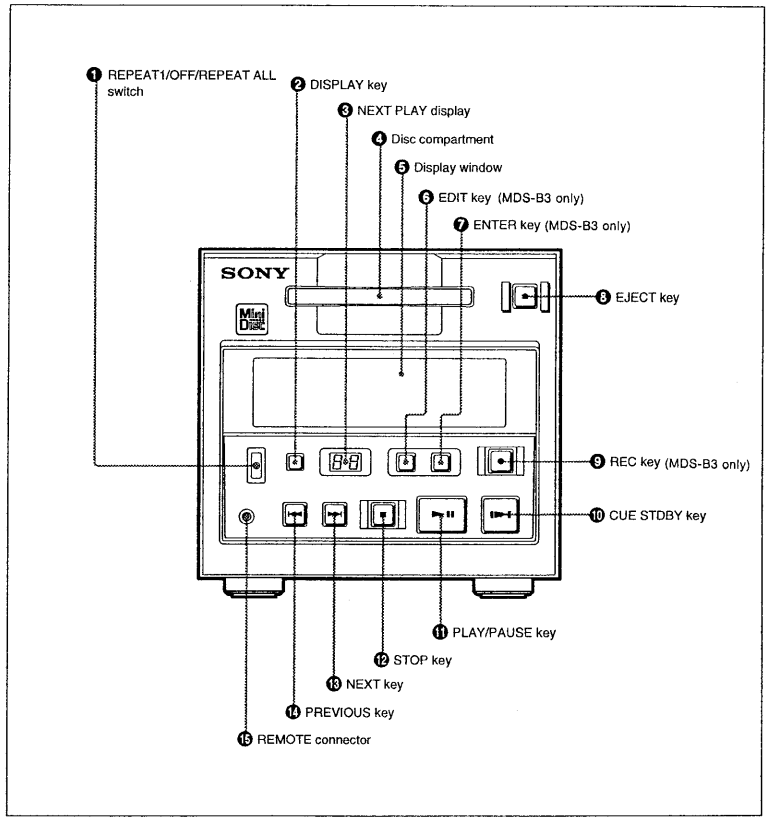
Remote control function

The MD recorder can be controlled by external control signals sent to the MDS-B3 through the REMOTE (25-pin) connector on the rear panel.
You can use a personal computer or other external equipment to control the MDS-B3 through the RS-232C connector.

Rack mounting compatibility

Three MD recorders can be mounted side by side in a standard 19" EIA rack.

2-1 Front Panel



Front panel of the MDS-B3

❶ REPEAT1/OFF/REPEAT ALL switch
Use to select repeated playback.
REPEAT1: The MD recorder plays back the current track repeatedly.
REPEAT ALL: The MD recorder plays back all tracks repeatedly and in sequential order.
OFF: The MD recorder plays back each track once.

❷ DISPLAY key
Press this key to display disc information. The following items appear in sequential order each time you press this key.
When the recorder is stopped: Disc title, total track number and total disc playing time, remaining recording time on disc. (In case of premastered discs: disc title, total track number and total disc playing time.)
During playback or playback pause: Track title, remaining playing time of current track, and elapsed playing time.
Hold down the key for three seconds while the track title is on and the remaining playing time will alternate with the track title in the display (auto display function).
During recording: Elapsed recording time of current track, remaining recording time on disc.
Press the DISPLAY key together with the STOP key to activate the menu setting function.

❸ NEXT PLAY display
Shows the next track number to be played after the current track. When the track number exceeds 99, "— —" appears on the display.

❹ Disc compartment
Automatically loads an inserted disc.

❺ Display window
Indicates the current MD recorder operating status, such as disc title, track title, track number, and elapsed time.

❻ EDIT Key (MDS-B3 only)
Press to select or cancel an editing function.

❼ ENTER Key (MDS-B3 only)
Press to execute a specified editing function.

❽ EJECT key
Press to eject the disc from the disc compartment. This key lights when no disc is loaded, and flashes during loading of a disc.

❾ REC (recording) Key (MDS-B3 only)
Press once to pause recording, then press PLAY/PAUSE key to start recording. The REC key lights when recording is paused or proceeding.

❿ CUE STDBY (standby) key
Press to return to the position where you last pressed the PLAY/PAUSE key. After finding the position, MD recorder enters playback pause. Use this key to check or return to a cuing position.

⓫ PLAY/PAUSE key
Press to start playback or recording.
Press during playback to temporarily stop the MD recorder; press again to cancel pause.
The PLAY/PAUSE key lights while the MD recorder is playing back or recording. It flashes while the MD recorder is in playback pause or recording pause.

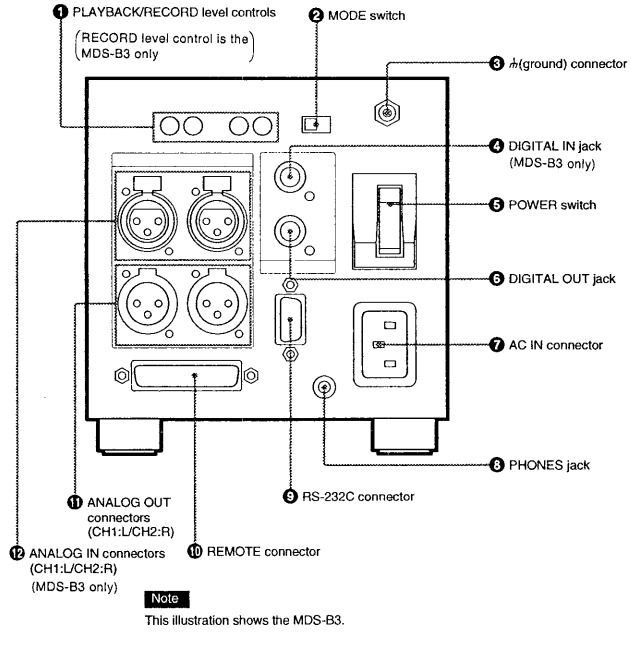
⓬ STOP key
Press to stop playback or recording, or to cancel program play.

⓭ NEXT key
Press to cue to the beginning of the next track.
Hold down this key during playback to scan forward while monitoring the sound.

⓮ PREVIOUS key
Press to cue to the beginning of the previous track.
Hold down this key during playback to scan backward while monitoring the sound.

⓯ REMOTE connector
Connect the supplied remote controller here.

2-2 Rear Panel


❶ PLAYBACK/RECORD level controls
(RECORD level control is the MDS-B3 only
❷ MODE switch
❸ ⏚(ground) connector
❹ DIGITAL IN jack (MDS-B3 only)
❺ POWER switch
❻ DIGITAL OUT jack
❼ AC IN connector
❽ PHONES jack
❾ RS-232C connector
❿ REMOTE connector
⓫ ANALOG OUT connectors (CH1:L/CH2:R)
⓬ ANALOG IN connectors (CH1:L/CH2:R) (MDS-B3 only)

Note
This illustration shows the MDS-B3.

Rear panel

❶ PLAYBACK/RECORD level controls
Adjust the analog input/output reference level during recording or playback by turning the control for each channel (CH-1:L/CH-2:R) with a bladed screwdriver. (RECORD level control is the MDS-B3 only)

❷ MODE switch
Use to select monaural or stereo mode for the analog input/output signal.
When MONO is selected during playback, the signals of channel 1 and 2 are lowered to below –6 dB, then output from ANALOG OUT CH-1(L) and CH-2(R).
When MONO is selected during recording, the signal from ANALOG IN CH-1(L) and ANALOG IN CH-2(R) are lowered to below –6 dB, then recorded to channels 1 and 2.

Note
If a signal is recorded from only one ANALOG IN connector in MONO mode, the recording level will be –6 dB lower than that recorded in STEREO mode. In this case, use the PLAYBACK/RECORD level control to bring the recording level up to that of STEREO mode. (MDS-B3 only)

❸ ⏚ (ground) connector
Connect directly to the ground.

❹ DIGITAL IN jack (RCA pin-jack) (MDS-B3 only)
Inputs digital audio signals for professional use (IEC958-TYPE1) or consumer use (IEC958-TYPE2).

❺ POWER switch
Press to turn on the MD recorder. Press again to turn the MD recorder off.

❻ DIGITAL OUT jack
Outputs digital audio signals for consumer use (IEC958-TYPE2) during playback.

❼ AC IN connector
Connect to an AC outlet with the supplied AC power cord.

❽ PHONES jack
Use to connect headphones.

❾ RS-232C connector

You can use a personal computer connected to the MDS-B3's RS-232C connector to control the following MDS-B3 operations:

- Key operations
  PLAY/PAUSE, STOP, REC, EJECT, PREVIOUS, NEXT, CUE STDBY
- Direct track access
- Selecting menu functions
  Selecting the timing of the end-of-message indication (EOM function), setting the AUTO PAUSE and AUTO CUE functions, setting the LevelSync function, and selecting the input signal
- Displaying of time and character data and display messages on an external computer
- Setting the auto display function

Pin hole No.	Name	Function
2	RxDATA (RECEIVE DATA)	Inputs signals from the computer
3	TxDATA (TRANSMIT DATA)	Outputs signals to the computer
4	DTR (DATA TERMINAL READY)	Outputs data terminal ready status to the computer
5	GND (SIGNAL GROUND)	Ground for signal lines
6	DSR (DATA SET READY)	Inputs data set ready status from the computer
7	RTS (REQUEST TO SEND)	Outputs request to send signal to the computer
8	CTS (CLEAR TO SEND)	Inputs clear to send status from the computer

Pin holes not listed above are not connected.

❿ REMOTE connector (D-sub 25-pin)
Connect to external equipment for remote control.

Pin assignment

Pin No.	Signal	Pin No.	Signal
1	GND (for status out)	14	CUE STDBY LED OUT
2	PLAY STATUS OUT	15	PAUSE STATUS OUT
3	EOM STATUS OUT	16	REC STATUS OUT
4	STOP STATUS OUT	17	PLAY/PAUSE LED OUT
5	EJECT LED OUT	18	5 V
6	NEXT COMMAND IN	19	Reserved
7	GND (for command IN)	20	PLAY /PAUSE COMMAND IN
8	Reserved	21	STOP COMMAND IN
9	EDIT COMMAND IN	22	DISPLAY COMMAND IN
10	ENTER COMMAND IN	23	REC COMMAND IN
11	KILL LOCAL COMMAND IN	24	CUE STDBY COMMAND IN
12	Reserved	25	PREVIOUS COMMAND IN
13	Reserved		

Caution

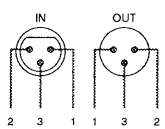
Do not set more than two COMMAND IN pins (pin numbers 6, 9, 10, 20, 21, 22, 23, 24, and 25) to LOW at the same time as this will cause the MD recorder to malfunction.

⓫ ANALOG OUT connectors (CH-1:L/CH-2:R, XLR 3-pin)
Output analog audio signals.

⓬ ANALOG IN connectors (CH-1:L/CH-2:R, XLR 3-pin) (MDS-B3 only)
Input analog audio signals.

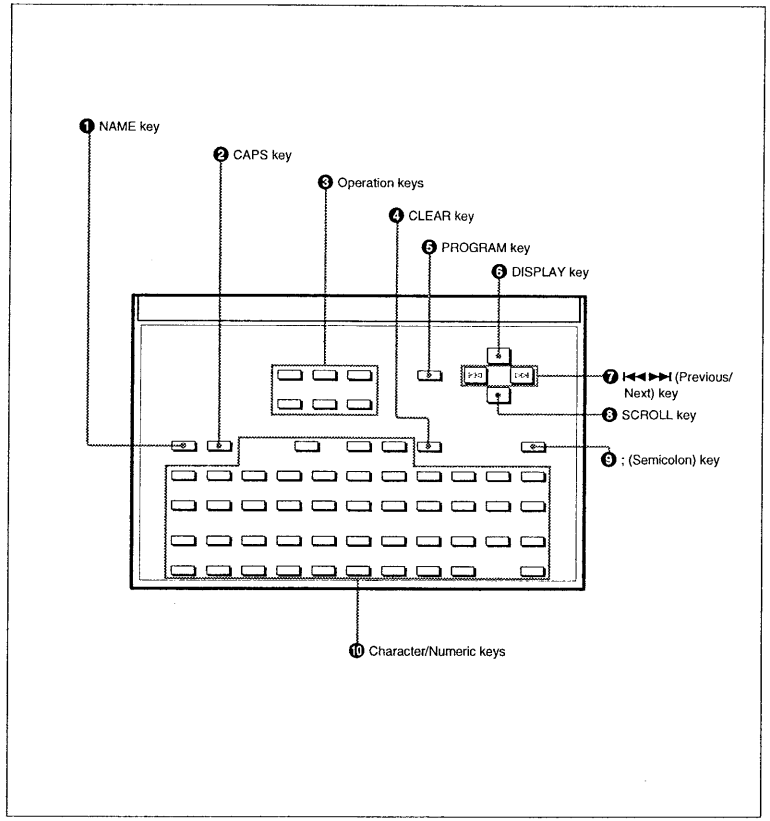
Pin assignment

Pin No.	Signal
1	GND
2	HOT
3	COLD



2-3 Remote Controller

Note : Not supplied of RM-DC1 (wired remote controller) for the model MDS-B4P.



Remote controller

❶ NAME key
Press to activate the title function.

❷ CAPS (capital letters) key
Press to enter uppercase letters.

❸ Operation keys
Use the following keys to do the same operations as the respective keys on the MD recorder.

EDIT/NO key
Press to specify or cancel an editing function.

ENTER/YES key
Press to execute a specified editing function.

REC (recording) key
Press once to pause recording, then press the PLAY/PAUSE key to start recording.

STOP key
Press to stop playback or recording, or to cancel program play.

PLAY/PAUSE key
Press to start playback or recording. Press during playback to temporarily stop the MD recorder; press again to cancel pause.

CUE STDBY (standby) key
Press to return to the position where you last pressed the PLAY/PAUSE key. After finding the position, the MD recorder enters playback pause. Use this key to check or return to a cuing position.

❹ CLEAR key
Press to erase an entered character or number.

❺ PROGRAM key
Press to activate program play.

❻ DISPLAY key
Press this key to display disc information. The following items appear in sequential order each time you press this key.
When the recorder is stopped: Disc title, total track number and total disc playing time, remaining recording time on disc. (In case of premastered discs: disc title, total track number and total disc playing time.)
During playback or playback pause: Track title, remaining playing time of current track, and elapsed playing time.
Hold down the key for three seconds while the track title or elapsed playing time is on and the display will alternate with the remaining playing time (auto display function).
During recording: Elapsed recording time of current track, remaining recording time on disc.
Press the DISPLAY key together with the STOP key to activate the menu setting function. (MDS-B3 only)

❼ ⏮⏭ (Previous/Next) key
Press the respective key to cue to the beginning of the previous or next track.
Hold down the key during playback to scan backward or forward with sound output.

❽ SCROLL key
Press to scroll titles over 13 characters in length.

❾ ; (Semicolon) key
Press while entering a title to divide the title into independently displayable parts.

❿ Character/Numeric keys
Use the numeric keys to specify tracks for immediate playback or program play. Use the character keys to enter disc and track titles.

3-1 Precautions

3-1-1 Installation Precautions

Install the MD recorder on a flat surface in a temperature-controlled room. Avoid using or storing the MD recorder at a location that is:
- extremely hot or cold.
- damp.
- subject to severe vibrations.
- subject to strong magnetic fields.
- subject to many hours of direct sunlight or close to heating equipment.

3-1-2 Handling Precautions

- Check the MD recorder's operating voltage before you plug it in. It must be identical with that of your local power supply.
- If you drop any liquid or metal object inside the MD recorder, immediately stop using it, unplug the power cord from the socket, and contact Sony service personnel.
- If the MD recorder will be unused for a long time, make sure to unplug its power cord from the socket. When unplugging the power cord, grasp it by the plug, not the cord.
- Never remove the cabinet. The laser light used in the MD recorder can cause damage to your eyes. If the MD recorder needs to be inspected, contact Sony service personnel.

Condensation

Bringing in the MD recorder from a cold place or turning on the room heating may cause moisture to condense on the lens within the MD recorder, resulting in abnormal operation. If this occurs, leave the power on. The moisture will evaporate within an hour and the MD recorder will function normally again. If the MD recorder does not operate normally after a few hours, contact Sony service personnel.

If trouble occurs

Should you detect abnormal noise, smell, or smoke, immediately turn off the power, unplug the power cord from the socket, and contact Sony service personnel.

AC power cord

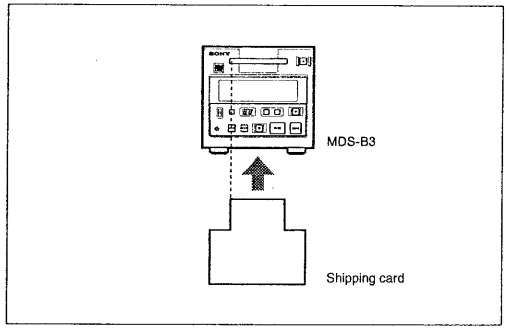
Do not use any power cord other than the one supplied with the MD recorder.

3-1-3 Shipping Precautions

When shipping the MD recorder, make sure the following conditions have been met:
- The MD recorder is in shipping mode.
- The MD recorder is packed in its original carton.

Please note that if these conditions are not met, any damage that occurs to the MD recorder during transport will not be covered by the service warranty.

Changing the MD recorder to shipping mode



Inserting the shipping card

1 Turn on the power.

2 Align the supplied shipping card against the left side of the disc compartment, then insert it.

3 After you hear the motor start up, withdraw the shipping card.

4 Turn off the power while "TOC Reading" appears in the display window.

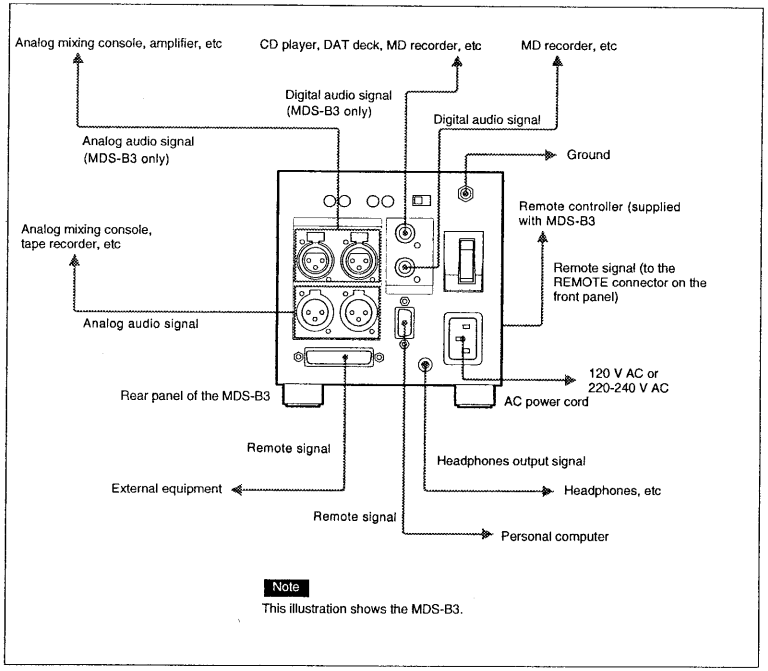
The MD recorder is now in shipping mode. This mode is automatically released when the MD recorder next turned on.

3-2 Connections

3-2-1 Precautions

- Turn off all equipment before connecting or disconnecting any cables.
- Insert all electrical plugs firmly since incomplete connections may cause noise.
- Use a cord somewhat longer than needed to prevent the plug from being pulled out when jarred or shaken.

3-2-2 Basic Connection Examples


Analog mixing console, amplifier, etc
CD player, DAT deck, MD recorder, etc
MD recorder, etc
Digital audio signal (MDS-B3 only)
Digital audio signal
Analog audio signal (MDS-B3 only)
Ground
Remote controller (supplied with MDS-B3
Analog mixing console, tape recorder, etc
Remote signal (to the REMOTE connector on the front panel)
Analog audio signal
120 V AC or 220-240 V AC
Rear panel of the MDS-B3
AC power cord
Remote signal
Headphones output signal
External equipment
Headphones, etc
Remote signal
Personal computer
Note
This illustration shows the MDS-B3.

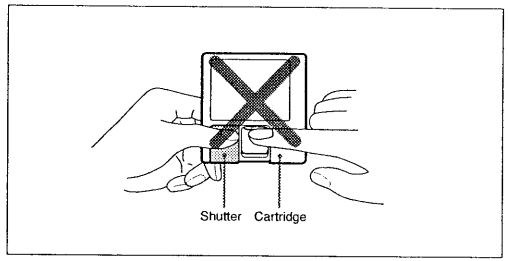
Basic connection examples

3-3 Handling MiniDiscs

Unlike CDs (Compact Discs), the MiniDisc is encased within a hard plastic cartridge which allows you to handle it without fear of dust or fingerprint contamination. However, a MiniDisc that has been contaminated or bent may cause the MD player to malfunction. To prevent damage to the contents of a disc and to enjoy clear sound permanently, take the following precautions when handling a MiniDisc:

Do not open the shutter to expose the disc

If you do so, the data on the disc may be damaged.



Handling MiniDiscs

Store MiniDiscs in a proper location

Do not place the cartridge where it will be subject to extremes of sunlight, temperature, moisture or dust.

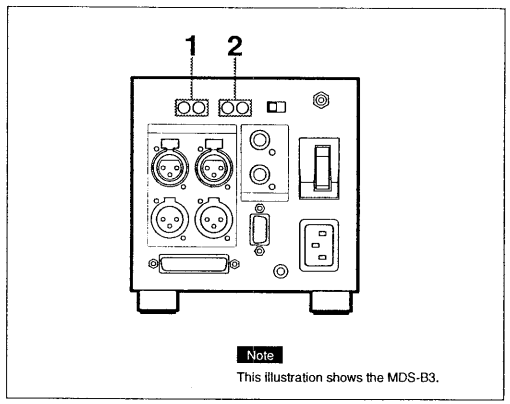
Cleaning the MiniDisc

Gently wipe the cartridge with a dry soft cloth to remove dust.

3-4 Setting the Analog Input/Output Reference Level

You can adjust the analog input/output reference level during recording or playback within a range of + 8 dB to –12 dB by turning the PLAYBACK/RECORD level controls on the rear of the MD recorder. The analog input/output reference level is set at +4 dB at –20 dB from the full bit level at the factory.

Setting the analog input/output reference level



Note

This illustration shows the MDS-B3.

Setting the reference level

1 Playback a disc recorded at –20 dB from the full bit. Adjust the output level of the ANALOG OUT connectors with the PLAYBACK (CH-1/CH-2) controls.

2 Input an audio signal to the ANALOG IN connectors and adjust the recording level with the RECORD (CH-1/CH-2) controls. (MDS-B3 only)

Note

Adjust the PLAYBACK/RECORD level controls with a bladed screwdriver. Do not use excessive force when turning the screwdriver or touch the screwdriver to any part other than the PLAYBACK/RECORD level controls.

4-1 Recording Procedure (MDS-B3 only)

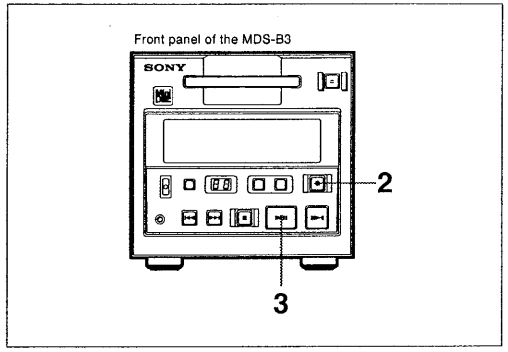
If the inserted disc already contains recorded material, the MD recorder will automatically record the new material at the end of the existing material with a new track number.

To adjust the recording level, see "3-4 Setting the Analog Input/Output Reference Level" on page 3-5.

To record track numbers automatically at points of low signal level, see "7-4 Recording a Track Number Automatically (LevelSync Setting)" on page 7-6.

Note

Before recording to a new disc or one that has been completely erased, record a 3- or 4-second blank track at the start of the disc to enable normal recorder operation. Once you have begun recording new material to subsequent tracks, the initial blank track becomes unnecessary and may be deleted with the erase function.



Recording procedure

1 Select either a digital or analog input signal.
See "7-6 Selecting the Input Signal (MDS-B3 only)" on page 7-8.

2 Press the REC key.
The MD recorder enters recording pause. (The REC key lights and the PLAY/PAUSE key flashes.)

3 Press the PLAY/PAUSE key.
Recording starts. (The REC and PLAY/PAUSE keys light.)

4 Play the sound source to be recorded.
The track number being recorded and elapsed recording time appear in the display.

To record a track number manually during recording

Press the REC key at the required point.

To stop recording

Press the STOP key.

To stop recording temporarily

Press the PLAY/PAUSE key.
To resume recording, press the PLAY/PAUSE key again.

To eject the disc

Press the STOP key to stop the MD, then press the EJECT key.

Note

If the MD recorder stays in recording pause for more than ten minutes, the MD recorder cancels recording pause, then stops.

Recording track numbers automatically

While inputting analog signals

Use the LevelSync setting which causes the MD recorder to record a track number whenever it detects a silent portion (i.e., the space between the tracks).

To use the LevelSync setting, see "7-4 Recording a Track Number Automatically (LevelSync Setting)" on page 7-6.

To set the input level, see "3-4 Setting the Analog Input/Output Reference Level" on page 3-6.

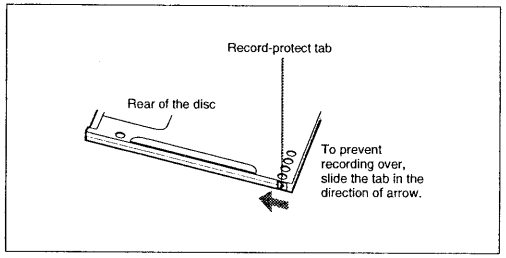
While inputting digital signals

When recording from a consumer CD player[1], MDS-B3 or MDS-B4P, the MDS-B3 automatically records track numbers on the basis of the level and U-bit of the digital input signal, whether or not the LevelSync setting is on or off.

[1] I.e., a CD player that is able to output digital signals with a Q-code added as a U-bit.

Preventing accidental erasure

Slide the record-protect tab to open the slot. To allow recording again, slide the tab to close the slot.



To protect a MiniDisc against accidental erasure

The recording system in your MD recorder is radically different from those used in cassette and DAT decks and is characterized by the limitations described below.

"Disc Full" lights up even before the disc has reached the maximum recording time (60 or 74 minutes)
When 255 tracks have been recorded on the disc, "Disc Full" lights up regardless of the total recorded time. More than 255 tracks cannot be recorded on the disc.

"Disc Full" lights up before the maximum number of tracks is reached
Fluctuations in emphasis within tracks are sometimes interpreted as track intervals, incrementing the track count.

The total recorded time and the remaining time on the disc may not equal the maximum recording time (60 or 74 minutes)
Recording is done in minumum units of 2 seconds each, no matter how short the material. The contents recorded may thus be shorter than the maximum recording capacity. Disc space may also be further reduced by scratches.

"TOC Reading" indication appears for a long time
If the inserted recorded disc is brand new, the "TOC Reading" indication appears on the display longer than for those that have been used.

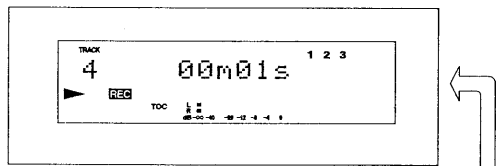
Playback of a track of under 4 seconds may be accompanied by sound dropout at the start of the next track or misoperation of the MD recorder.

4-2 Display Information During Recording (MDS-B3 only)

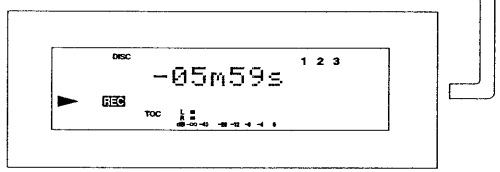
Changing the display information during recording

Each press of the DISPLAY key during recording changes the information on the display as follows:

• Recorded time of the current track



• Remaining recording time on disc

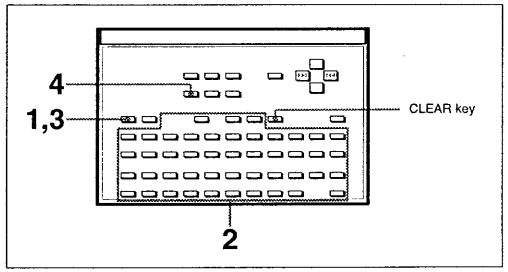


4-3 Adding Disc and Track Titles (MDS-B3 only)

Use the title function to add titles to your own discs and tracks with the character/numeric keys on the remote controller.
The maximum length of a single title is 100 characters, and the maximum number of characters for all titles on a disc is 1,792.
Newly added titles are temporarily stored in the recorder's memory (not saved to disc). To record the titles to the disc, press the STOP key or eject the disc before turning off the power.
For more details, see "6-1 Overview of Editing Functions" on page 6-2.

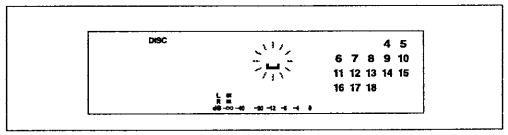
Adding a disc title

You can use this procedure while the MD recorder is stopped to add a title to the MiniDisc.



Adding a disc title

1 Insert the disc, then press the NAME key while the MD recorder is stopped.
A flashing cursor appears in the display.



2 Type in a disc title with the character/numeric keys on the remote controller.

3 Press the NAME key.
The disc title is entered.

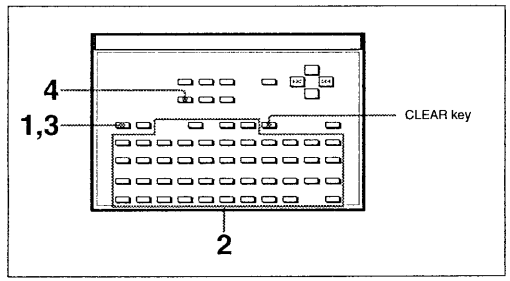
4 Press the STOP key.
The title is recorded to the disc.

Making a correction

Press the CLEAR key to erase a typing error, then enter the correct character.

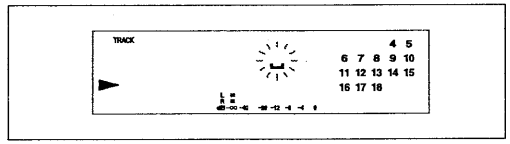
Adding a track title

Follow the procedure below to add a title to a track during playback, playback pause, or recording.



Adding a track title

1 Press the NAME key while playing, pausing or recording the track to be named.
A flashing cursor appears in the display.



2 Type in the track title with the character/numeric keys on the remote controller.

3 Press the NAME key.
The track title is entered.

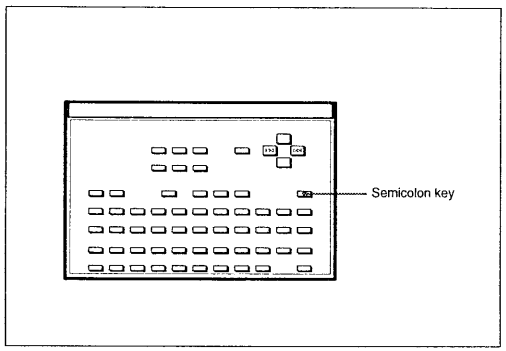
4 Press the STOP key.
The title is recorded to the disc.

Making a correction

Press the CLEAR key to erase a typing error, then enter the correct character.

Dividing a track title into separate parts

When you add a track title, you can divide it by using semicolons, then display each part independently by pressing the DISPLAY key during playback of the track.



Dividing a track title into separate parts

Note

If "Protected" appears in the display

The record-protection slot on the disc is open and titles cannot be written to the disc. To add titles to the disc, eject the disc and close the slot.

4-4 Restrictions on Digital Copying (MDS-B3 only)

Track mode data recorded to disc during recording

Track mode data are 8 bits of information recorded in the user TOC (Table Of Contents) area on the disc and indicating such disc-related conditions as copyright status, digital copy restriction, disc use, and emphasis data.
The two track mode bits d2 and d3 indicate copyright status and the restriction on digital copies.

Track mode

d1 [d2 d3] d4 d5 d6 d7 d8

d2 : Copyright status
- 0 : Copyrighted
- 1 : Uncopyrighted

d3 : Digital copy generation
- 0 : Original
- 1 : First generation copy or more

When recording an analog input signal or an IEC958-TYPE1 digital input signal (for professional use)

The disc will be completely copy-enabled within Serial Copy Management System.
This status is indicated by track mode bit values of d2=1 and d3=1.

When recording an IEC958-TYPE2 digital input signal (for consumer use)

Three types of discs can be produced, depending on the sub code information included in the input signal.

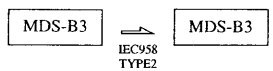
Input signal		Track mode bits		During digital copying between two consumer MD recorders
Category code	Channel status bit 2	d2	d3	
Category codes other than that below	1 (Uncopyrighted)	1	1	Copy-enabled
	0 (Copyrighted)	0	1	Copy-disabled
General ACTUAL A/D	–	0	0	First-generation copy only

4-4 Restrictions on Digital Copying (MDS-B3 only)

No restrictions are placed on digital copying of MD recordings made on professional MD recorders, as long as you use the MDS-B3.

The conditions for digital copying, as determined by track mode bits d2 and d3, are shown below.

When using two MDS-B3s



×11×××××	→	×11×××××	Copy-enabled
×00×××××	→	×01×××××	Copy-enabled
×01×××××	→	×01×××××	Copy-enabled

When using a consumer MD recorder to make a copy of a disc recorded on the MDS-B3

×11×××××	→	×11×××××	Copy-enabled
×00×××××	→	×01×××××	First generation copy only
×01×××××	→	Copy-disabled	

5-1 Overview of Playback Functions

Many playback functions can be used in a variety of ways in broadcasting. This section gives an overview of these functions and their application.

AUTO PAUSE and AUTO CUE functions

AUTO PAUSE function

When AUTO PAUSE is on, the MD recorder pauses after locating the track.

How to activate it: Specify by menu.

For details, see page 7-4.

Purpose: Prevents on-the-air mistakes by pausing the MD recorder right before the start of play. When AUTO PAUSE is off, the MD recorder starts playing back immediately after locating the track.

AUTO CUE function

When the AUTO CUE function is on, the MD recorder changes to playback pause when it detects a rise in audio signal during a silent portion (–54 dB or less).

How to activate it: Specify by menu.

For details, see page 7-4.

Purpose: For precise cueing to play back sounds instantly.

When the MD recorder reaches a track with no sound while AUTO CUE is on

During one-track repeat play: The MD recorder pauses at the beginning of the track.

During all-tracks repeat play or when the repeat play function is off: The MD recorder locates the point where the audio level rises at the beginning of the next track.

Relation between the track location operation and AUTO PAUSE/AUTO CUE function

The following table indicates the respective track location operation of the MD recorder in relation to AUTO PAUSE/AUTO CUE function.

When locating a specific track with the numeric keys

AUTO PAUSE and AUTO CUE off	Begins playback immediately after locating the specified track.
AUTO PAUSE on	Changes to playback pause after locating the beginning of the specified track.
AUTO CUE on	Changes to playback pause just as the audio level rises (above –54 dB) at the beginning of the located track.

When locating the beginning of a track by pressing the NEXT or PREVIOUS key (AMS)

AUTO PAUSE and AUTO CUE off	Displays the track number after locating the specified track, then stops.
AUTO PAUSE on	Changes to playback pause after locating the beginning of the specified track.
AUTO CUE on	Changes to playback pause just as the audio level rises (above –54 dB) at the beginning of the located track.

Repeat playback functions

Three types of repeat playback functions can be used.

One-track repeat playback

The MD recorder plays back a specific track repeatedly.

How to activate it: Set the REPEAT1/OFF/REPEAT ALL switch to REPEAT1.

Purpose: For repeated playback of the same material.

All-tracks repeat playback

The MD recorder plays back all tracks repeatedly and in sequential order.

How to activate it: Set the REPEAT1/OFF/REPEAT ALL switch to REPEAT ALL.

Purpose: For repeated playback of a recorded or edited disc with a particular track sequence.

Program repeat playback

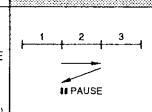
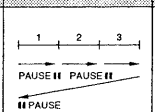
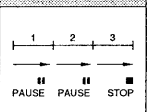
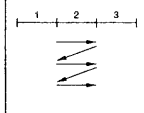
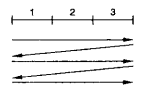
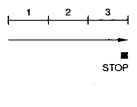
The MD recorder plays back a program repeatedly.

How to activate it: Set the REPEAT1/OFF/REPEAT ALL switch to either REPEAT1 or REPEAT ALL, then press the PROGRAM key.

Purpose: For repeated playback of the programmed tracks.

5-1 Overview of Playback Functions

The following table indicates the respective repeat play operation of the MD recorder in relation to AUTO PAUSE.

	During one-track repeat play	During all-tracks repeat play	When repeat play function is OFF
When AUTO PAUSE or AUTO CUE are on[a]			
When AUTO PAUSE and AUTO CUE are off			

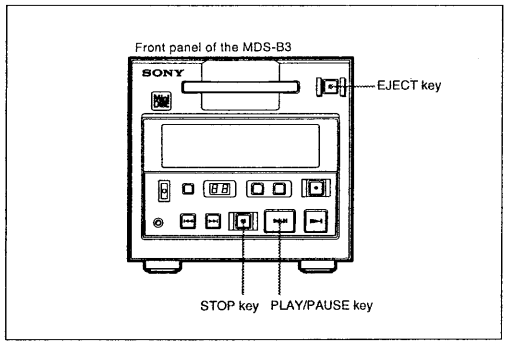
[a] When AUTO PAUSE is on, the MD recorder pauses after locating the track.
When AUTO CUE is on, the MD recorder pauses just as the audio level rises at the beginning of the located track.

Cue standby function

Pressing the CUE STDBY key causes the MD recorder to return to and enter playback pause at the last cueing position specified by pressing the PLAY/PAUSE key. Use this key to check or go to a previously set cueing position.
During program play, this function operates only within the currently playing track, and cannot be used to return to a cueing position within a previously played back.

5-2 Playback Procedure

5-2-1 Playing Back



Playing Back

Press the PLAY/PAUSE key.

When AUTO PAUSE and AUTO CUE are off:
The MD recorder starts playing. The current track title appears in the display.
When AUTO PAUSE is on:
The MD recorder enters playback pause at the beginning of the first track. The current track title appears in the display.
When AUTO CUE is on:
The MD recorder enters playback pause just as the audio level rises (above –54 dB) at the beginning of the first track. The current track title appears in the display.

To stop playback
Press the STOP key.

To stop playback temporarily
Press the PLAY/PAUSE key.
To restart playback, press the PLAY/PAUSE key again.

To eject the disc
Press the STOP key to stop playback, then press the EJECT key.

Your MiniDisc recorder is designed as a stereo system and cannot be used to play back monaural format MDs.

5-2-2 Locating a Specific Position (Search)

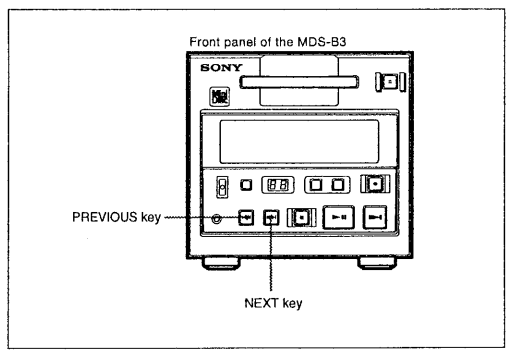
To find a specific position on the MD, use the NEXT and PREVIOUS keys during playback to quickly scan forward or backward.

To forward scan the disc
Hold down the NEXT key during playback. Releasing the key causes the MD recorder to play from the new location.

To backward scan the disc
Hold down the PREVIOUS key during playback. Releasing the key causes the MD recorder to play from the new location.

Note

Tracks created through editing may exhibit sound dropout during search operations.



Locating a specific position

5-3 Locating a Track

5-3-1 Locating a Specific Track

Access specific tracks instantly by entering their respective track numbers with the numeric keys on the remote controller.
If AUTO PAUSE and AUTO CUE are off, the MD recorder begins playback immediately after locating the specified track.
If AUTO PAUSE is on, the MD recorder changes to playback pause after locating the beginning of the specified track.
If AUTO CUE is on, the MD recorder changes to playback pause just as the audio level rises (above –54 dB) at the beginning of the located track.
For details on the AUTO PAUSE and AUTO CUE functions, see "7-2 Setting the Timing of the EOM Indication" on page 7-3.

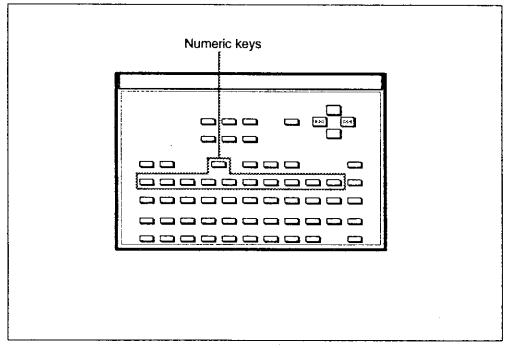
To specify track numbers greater than 10

Use the >10 key to specify the respective power of ten.

Example:

To locate the 15th track, press the >10 key once, then press 1 and 5.

To locate the 215th track, press the >10 key twice, then press 2, 1, and 5.



Locating a specific track

5-3-2 Locating the Beginning of a Track (AMS[1])

When the MD recorder is stopped or in playback pause, you can quickly skip to any track number before or after the current one by pressing the NEXT or PREVIOUS key. (Holding down a key causes the track numbers to change quickly.)
If AUTO PAUSE and AUTO CUE are off, the MD recorder displays the track number after locating the specified track, then stops.
If AUTO PAUSE is on, the MD recorder changes to playback pause after locating the beginning of the specified track.
If AUTO CUE is on, the MD recorder changes to playback pause just as the audio level rises (above –54 dB) at the beginning of the located track.
For details on the AUTO PAUSE and AUTO CUE functions, see "7-3 Pausing Before Playback (AUTO PAUSE and AUTO CUE Functions" on page 7-4.

To go to the beginning of a preceding track

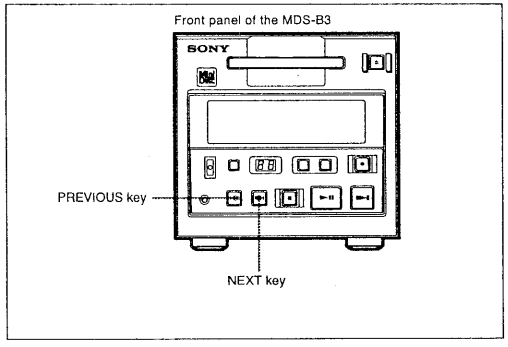
Press the PREVIOUS key. Each press of the key decreases the track number by one.

To go to the beginning of a proceeding track

Press the NEXT key. Each press of the key increases the track number by one.

To go quickly to the last track on the disc

Press the PREVIOUS key after inserting the disc.



Locating a specific track

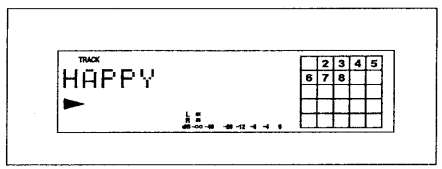
[1] AMS is the abbreviation for Automatic Music Sensor.

5-4 Display Information During Playback

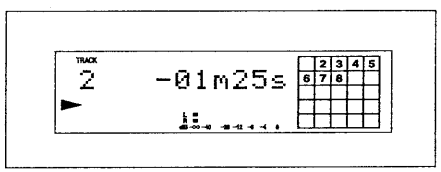
Changing the display information during playback

Each press of the DISPLAY key during playback or playback pause, changes the information on the display as follows:

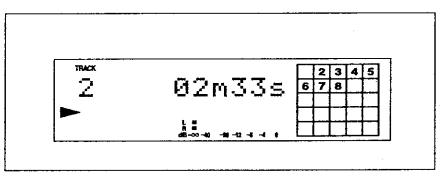
• Track title[1]



• Remaining playing time of the current track



• Elapsed playing time of the current track



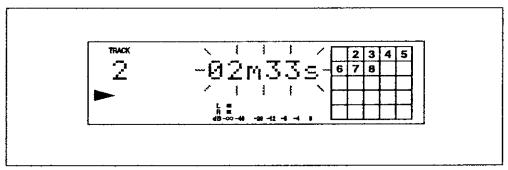
[1] If the track title has been divided into separate parts by semicolons, each part is displayed independently each time you press the DISPLAY key.
To divide a track title into separate parts, see "Dividing a track title into separate parts" on page 4-7.

Alternating display of title of current track and the remaining playing time (auto display function)

To cause the title of current track and remaining playing time to alternately appear on the display, hold down the DISPLAY key for about three seconds during playback, then release it.
Use this function when you want to check the remaining time and title of the current track during playback.
To cancel the alternating display, hold the DISPLAY key down for about three seconds again.

When an end of a track approaches

When the end of a track approaches, the indication in the display starts to flash (EOM indication).
To specify the timing of the indication, see "7-2 Setting the Timing of the EOM Indication" on page 7-3.



Display when the end of the track approaches

Note

If the EOM indication function activates while the auto display function is on, the track title stays on and begins to flash.

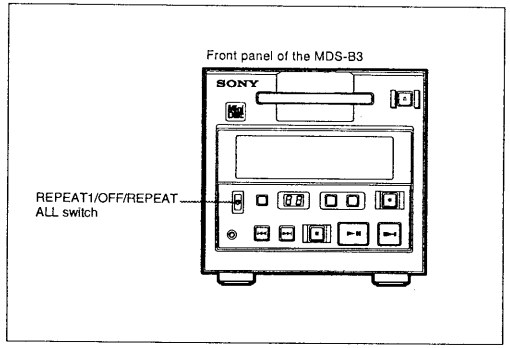
5-5 Playing Tracks Repeatedly

You can select the following repeat functions with the REPEAT1/OFF/REPEAT ALL switch.

REPEAT1: The MD recorder plays back the current track repeatedly.

OFF: The MD recorder plays back each track once.

REPEAT ALL: The MD recorder plays back all tracks repeatedly and in sequential order. During program play, the MD recorder plays back selected tracks in a programmed order repeatedly.



Playing tracks repeatedly

Once you have specified the repeat function during program play, you cannot use the REPEAT1 setting to playback repeatedly individual tracks within the program.

5-6 Playing Back a Program (Program Play)

Use the program play function to specify the playback sequence of multiple tracks.

1 Press the PROGRAM key of the remote controller while the MD is stopped.
The PROGRAM indicator turns on.

2 Enter the numbers of the tracks to be played in the order of their playback.
When you enter a track number, the display shows the track number and the order of the specified track, followed by the total program time.

3 Press the PLAY/PAUSE key.
When AUTO PAUSE and AUTO CUE are off:
Program play starts from the first track of the program.
When AUTO PAUSE is on:
The MD recorder enters playback pause at the beginning of the first track of the program.
When AUTO CUE is on:
The MD recorder enters playback pause just as the audio level rises (above –58 dB) at the beginning of the first track of the program.

To enter track numbers greater than 10

Press the >10 key to indicate the respective power of ten.

Example:

To enter the 15th track, press the >10 key once, then press 1 and 5.

To enter the 215th track, press the >10 key twice, then press 2, 1, and 5.

To erase tracks from a program

Press the CLEAR key. The displayed track number is erased from the program. To continue erasing tracks one at a time, press the CLEAR key repeatedly.

To erase an entire program

Press the STOP key.

To stop program play

Press the STOP key. Pressing the STOP key again erases the entire program.

To cancel program play

Press the PROGRAM key.
The PROGRAM indicator turns off.

6-1 Overview of Editing Functions (MDS-B3 only)

Purpose of editing functions

The MDS-B3 editing functions allow you to rearrange the contents of recorded MDs to make it easy to locate specific tracks during playback.

Front panel or remote controller operations

You can do MD editing on either the front panel on the MD recorder or the remote controller. Editing procedures are identical in both cases, except in the specification of tracks to be edited, which is done with the numeric keys on the remote controller and with the NEXT and PREVIOUS keys on the front panel.

Selecting the editing function

Select the editing function by pressing the EDIT/NO key. Each press of the key displays a different editing function as follows:

- Erase? — For erasing recorded tracks
- Divide? — For dividing recorded tracks
- Combine? — For combining recorded tracks
- Move? — For moving recorded tracks

Tips on editing

If an editing procedure increases or decreases the number of tracks on the MD, the MD recorder will automatically renumber the tracks on that MD. For example, if you erase the second track, the third track becomes track 2, and all proceeding track numbers decrease by one. Since track numbers may change several times during editing operations, you should check the name and contents of all tracks as you edit them.

STOP key function

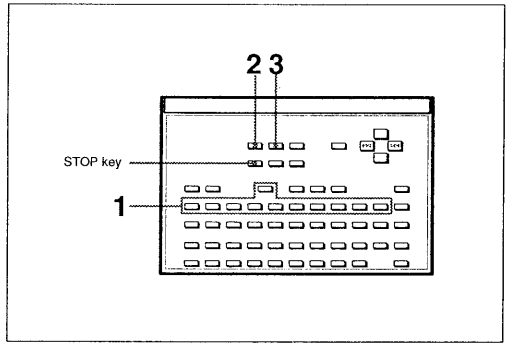
If you make any changes to an MD using the editing functions, you must press the STOP key to record the changes in the table of contents (TOC) area of the disc before turning off the MD recorder. If you don't do this, the editing changes will not be saved and the original MD contents will be unchanged.
You can press the STOP key to record changes after each editing operation, or save all changes together by pressing STOP or EJECT key after the last editing operation.

6-2 Erasing Recordings (Erase Function) (MDS-B3 only)

Use the erase function to erase a single track, successive tracks, or all tracks from a recorded disc.
After erasing a track, each track number following the erased track and the total number of tracks decrease by one.

Erasing a single track

You can erase a single track while the MD recorder is stopped, playing, or in playback pause status.



Erasing a single track

1 Enter the number of the track to be erased with the numeric keys (or the NEXT or PREVIOUS key on the front panel).

2 Press the EDIT/NO key until "Erase?" appears.

3 Press the ENTER/YES key.
"Complete" appears for a few seconds, then disappears when the specified track has been erased.

To continue erasing tracks

Repeat steps 2 and 3 to erase more tracks.

To cancel the erase function

Press the EDIT/NO or STOP key to make "Erase?" disappear.

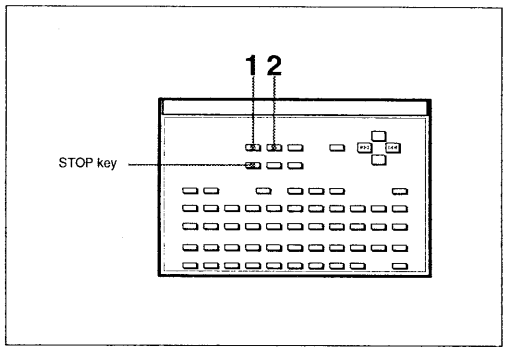
6-2 Erasing Recordings (Erase Function) (MDS-B3 only)

Notes

- If "Erase!!?" appears, it means that the track was recorded or edited on another MD recorder and is write-protected. To erase the track, press the ENTER/YES key while "Erase!!?" is displayed.
- If "Protected" appears, it means that the record-protect slot on the MD is open and the track cannot be erased. Eject the disc and close the slot, then reinsert the MD to erase the track.

Erasing all tracks on an MD

You can erase all tracks on an MD when the MD recorder is stopped.



Erasing all tracks

1 Hold down the EDIT/NO key for about a second until "All Erase?" appears.

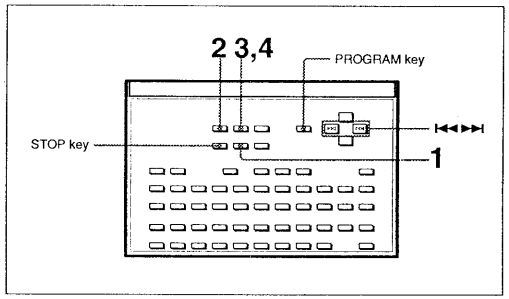
2 Press the ENTER/YES key.
"Complete" appears for a few seconds, then disappears when all recorded tracks have been erased.

To cancel the Erase Function
Press the EDIT/NO or STOP key to make "All Erase?" disappear.

The remaining recording time does not increase even after erasing numerous short tracks
Tracks of under 8 seconds in length are not counted and so erasing them may not lead to an increase in the recording time.

6-3 Dividing a Recorded Track (Divide Function) (MDS-B3 only)

To randomly access certain portions of a track, the divide function allows you to create separate tracks for each portion. You can also use the divide function to erase selected portions of a track, by first specifying the portion as a separate track, then erasing that track *(see "6-2 Erasing Recordings (Erase Function) on page 6-3)*.
Do the divide function while playing the disc.

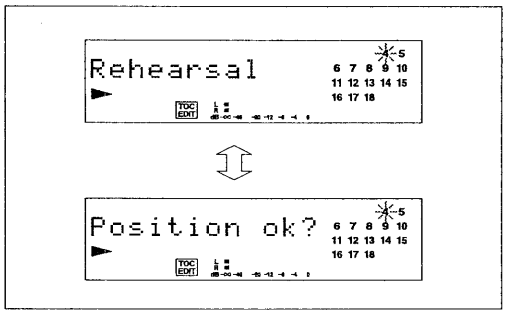


Dividing a recording track

1 While playing the track to be divided, press the PLAY/PAUSE key at the point where the new track is to begin.
The MD recorder changes to playback pause.

2 Press the EDIT/NO key until "Divide?" appears.

3 Press the ENTER/YES key.
"Rehearsal" and "Position ok?" alternately appear and the starting portion of the new track plays back repeatedly.



(Continued)

4 When you find the correct position, press the ENTER/YES key.
"Complete" appears for a few seconds, then disappears when the track has been divided. The MD recorder then begins playing from the point of division.

If the starting position is incorrect

Press the EDIT/NO key, then, while monitoring the sound, press the ▶▶| (Next) or |◀◀ (Previous) key to change the starting position.
You can move the starting position in steps of ±0.06 seconds, up to −128 to +127 steps from the original position.
"Rehearsal" and "Position ok?" alternately appear in the display while the starting position plays repeatedly.

To change the step interval

Press the PROGRAM key to select ±1 for a step interval of ±0.06 second, or ±2 for a step interval of ±0.12 second.

To cancel the divide function

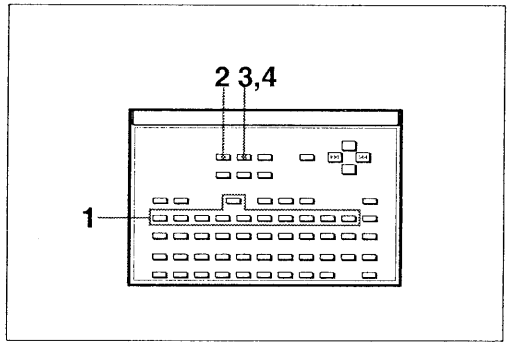
Press the EDIT/NO or STOP key to make "Divide?" disappear.

Notes

- A new track created by the divide function will have no title even if the original track has one.
  To add a title to the new track, see "4-3 Adding Disc and Track Titles" on page 4-5.
- If "Protected" appears, it means that the record-protect slot is open and the track cannot be divided. Eject the disc and close the slot, then reinsert the MD and divide the track.

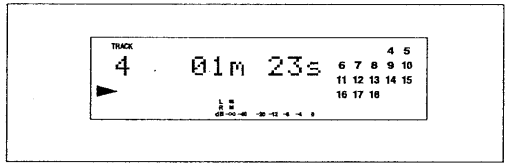
6-4 Combining Recorded Tracks (Combine Function) (MDS-B3 only)

Use the combine function to combine consecutive tracks on a recorded disc.
You can combine tracks while the MD recorder is stopped, playing, or in playback pause status.



Combining recorded tracks

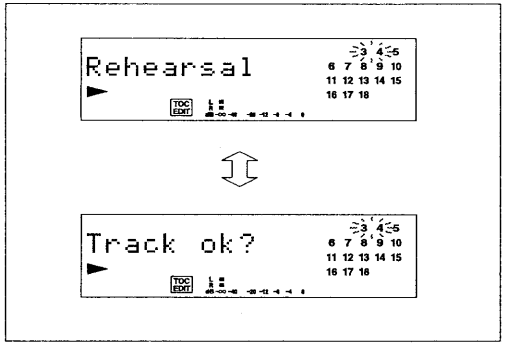
1 Specify the second track of the two tracks to be combined with the numeric keys (or the NEXT and PREVIOUS keys on the front panel).
For example, enter 4 to combine tracks 3 and 4.



2 Press the EDIT/NO key until "Combine?" appears.

(Continued)

3 Press the ENTER/YES key.
"Rehearsal" and "Track ok?" appear alternately and the position where the two tracks are to be joined (i.e., the end of the first track and the beginning of the second track) plays back repeatedly.
If the position is incorrect, press the EDIT/NO key to cancel the combine function.
Repeat steps 1 to 3 until you find the correct position.



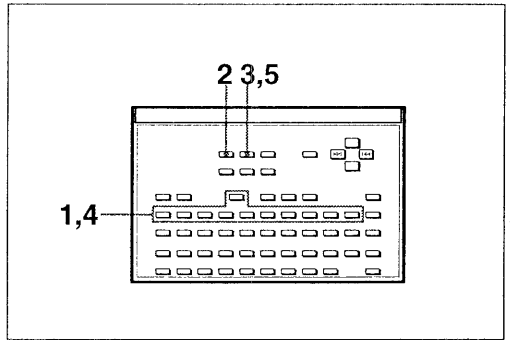
4 If the position is correct, press the ENTER/YES key.
"Complete" appears for a few seconds, then disappears when the tracks have been combined.

Notes

- If the "Sorry" appears, the specified tracks cannot be combined. Extensive editing of the same track may make it impossible to combine with another track. This is due to the technical limitation of the MD recorder and is not a mechanical error.
- If both tracks to be combined have track titles, the title of the second track is erased and title of the first track is used as the title of the combined track.
- If "Protected" appears, it means that the record-protect slot is open and the tracks cannot be combined. Eject the disc and close the slot, then reinsert the MD and combine the tracks.

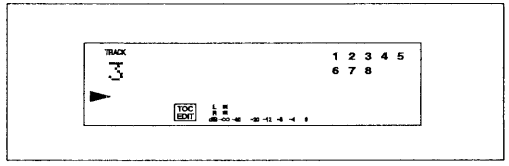
6-5 Moving Recorded Tracks (Move Function) (MDS-B3 only)

Use the move function to change the order of specific tracks.
You can change the order of the tracks while the MD recorder is stopped, playing or in playback pause status.

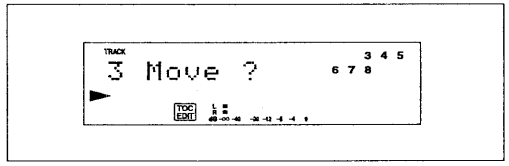


Moving recorded tracks

1 Specify the track to be moved with the numeric keys (or the NEXT and PREVIOUS keys on the front panel).
For example, enter 3 to move track 3.

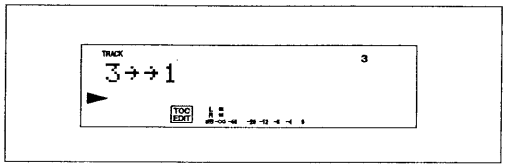


2 Press the EDIT/NO key until "Move?" appears.

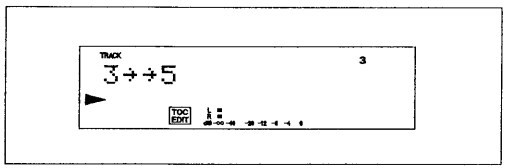


(Continued)

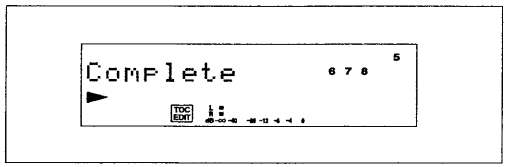
3 Press the ENTER/YES key.
The number of the track to be moved and the new track position appear.



4 Specify the new position of the specified track with the numeric keys (or the NEXT and PREVIOUS keys on the front panel).
For example, enter 5 to move track 3 to track position 5.



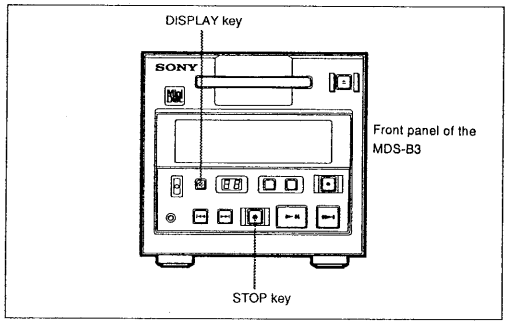
5 Press the ENTER/YES key.
"Complete" appears for a few seconds, then disappears when the track has been moved.



Note

If "Protected" appears, it means that the record-protect slot is open and the track cannot be moved. Eject the disc and close the slot, then reinsert the MD and move the track.

7-1 Using the Menu Functions



Activating menu functions

Activating the menu

Press the STOP and DISPLAY keys on the front panel of the MD recorder simultaneously.

To select a menu function

Press the DISPLAY key. The menu function display changes as follows:

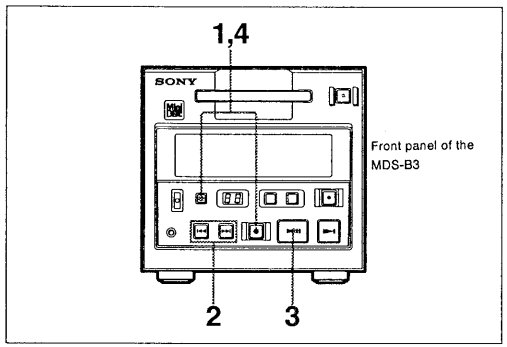
- Setting the timing of the end-of-message (EOM) indication
- Pausing before playback (AUTO PAUSE and AUTO CUE functions)
- Recording a track number automatically (LevelSync setting function (MDS-B3 only)
- Displaying the hours meter
- Selecting the input signal (MDS-B3 only)
- Setting the RS-232C interface
- Setting up for timer-activated playback

To cancel the menu

Press the STOP key.

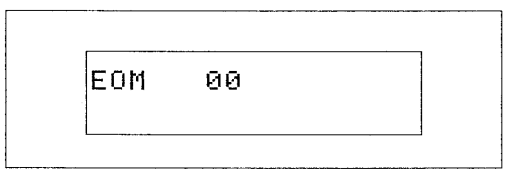
7-2 Setting the Timing of the EOM Indication

The EOM indication can be set to flash between 1 and 35 seconds before the end of a track to indicate that the end is approaching. Use the procedure below to set the timing.



Setting the timing of the end-of-message (EOM) indication

1 Press the STOP and DISPLAY keys simultaneously.
The EOM (end-of-message) function goes on.



2 Press the NEXT or PREVIOUS key to select the timing.

3 Press the PLAY/PAUSE key to enter the EOM timing.

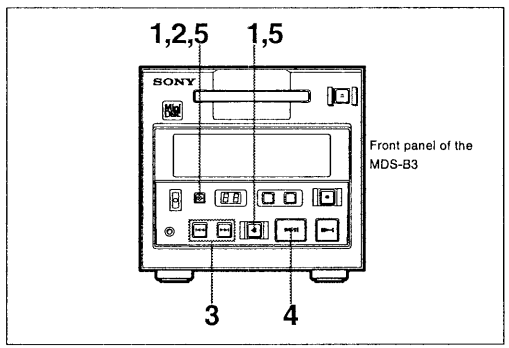
4 To continue with another menu function, press the DISPLAY key until the function appears.
To cancel the menu, press the STOP key.

7-3 Pausing Before Playback (AUTO PAUSE and AUTO CUE Functions)

AUTO PAUSE function
When AUTO PAUSE is on, the MD recorder changes to playback pause at the start of the specified track, then starts playing the track when you press the PLAY/PAUSE key.
The AUTO PAUSE function is useful for pre-cueing tracks on multiple MD recorders during on-the-air broadcasting.

AUTO CUE function
When AUTO CUE is on, the MD recorder changes to playback pause just as the audio level rises (above –54 dB) at the start of a track. You can then play the track by pressing the PLAY/PAUSE key.
This function is useful for cueing to and delivering special sound effects during plays and other productions.

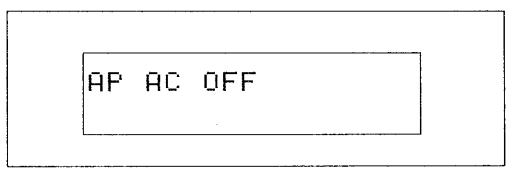
Activating the AUTO PAUSE/AUTO CUE functions



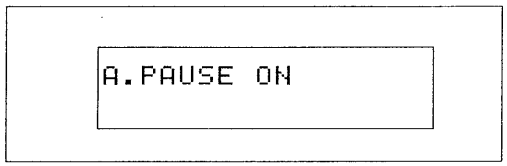
Activating the AUTO PAUSE/AUTO CUE functions

1 Press the STOP and DISPLAY keys simultaneously.
A menu function appears.

2 Press the DISPLAY key until "AP AC OFF" appears.



3 Press the NEXT or PREVIOUS key to select the setting.
AP AC OFF: AUTO PAUSE and AUTO CUE are off.
A. PAUSE ON: AUTO PAUSE is on.
A. CUE ON: AUTO CUE is on.



4 Press the PLAY/PAUSE key to enter the selected setting.

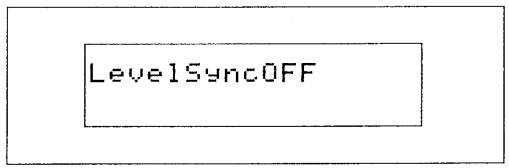
5 To continue with another menu function, press the DISPLAY key until the function appears.
To cancel the menu, press the STOP key.

7-4 Recording a Track Number Automatically (LevelSync Setting) (MDS-B3 only)

LevelSync setting is essentially the adding of track numbers at specified points while you record. This allows you to quickly locate those points later either by directly specifying the track number or by using the AMS function.
When track numbers are added automatically, the MD recorder system records track numbers whenever it detects a silent portion (i.e., the space between tracks). Manually you record track numbers by pressing the REC key during recording.
To add new track numbers to a track that has already been recorded, you must use the divide function to divide the track. See "6-3 Dividing a Recorded Track (Divide Function)" on page 6-5.

1 Press the STOP and DISPLAY keys simultaneously.
A menu function appears.

2 Press the DISPLAY key until "LevelSyncOFF" appears.



3 Press the NEXT or PREVIOUS key to select the setting.
ON: Track marks are automatically recorded by the MD recorder system when it detects a sudden rise in audio level after a silent portion (i.e., a signal level of less than –54 dB that continues for 1.6 seconds, then jumps to –54 dB or more). The rise is taken to be the start of a new track.
OFF: A track mark is recorded when you press the REC key during MD recording.

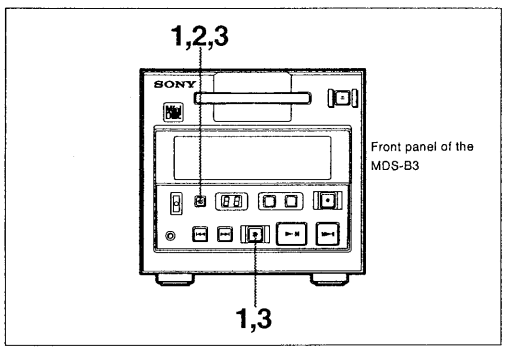
4 Press the PLAY/PAUSE key to enter the levelsync setting.

5 To continue with another menu function, press the DISPLAY key until the function appears.
To cancel the menu, press the STOP key.

Track numbers are not recorded correctly
Incorrect assignment or recording of track numbers may result when certain CDs are recorded with the "LevelSync ON" indication on.

7-5 Reading the Hours Meter

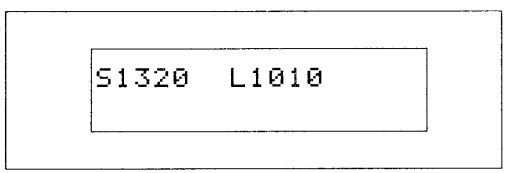
This function allows you to display the accumulated operating time of the laser diode (during recording operations) and of the spindle motor. Use this information as the basis for replacing the BU block.



Reading the hours meter

1 Press the STOP and DISPLAY keys simultaneously.
A menu function appears.

2 Press the DISPLAY key until the hours meter showing the accumulated operating times appears.
S: Accumulated spindle motor operating time.
L: Accumulated laser diode operating time.



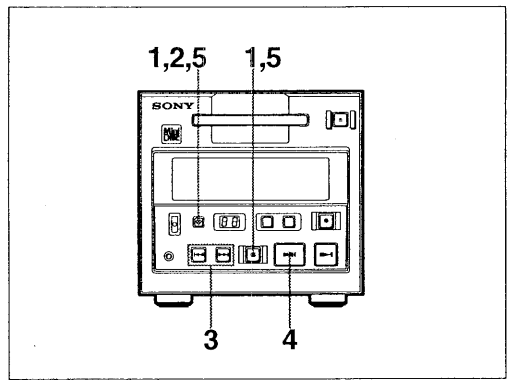
3 To continue with another menu function, press the DISPLAY key until the function appears.
To cancel the menu, press the STOP key.

Note

When the BU block is replaced, a new EEP-ROM is installed and the hours meter is zeroed. Since this resets the other menu functions as well, you must make the applicable settings again.

7-6 Selecting the Input Signal (MDS-B3 only)

You can select either an analog signal or digital signal for input.



Selecting the input signal

1 Press the STOP and DISPLAY keys simultaneously.
A menu function appears.

2 Press the DISPLAY key until "Digital in" or "Analog in" appears.

3 Press the NEXT or PREVIOUS key to select the input signal.
Digital in: For digital signal input. The "D.IN" indication lights.
Analog in: For analog signal input.

4 Press the PLAY/PAUSE key to enter the selected setting.

5 To continue with another menu function, press the DISPLAY key until the function appears. To cancel the menu, press the STOP key.

7-7 Setting the RS-232C Interface

External equipment connected to the RS-232C connector at the rear of the MDS-B3 can be used to control the MDS-B3. Before you can do this, however, you must use the menu-based procedures below to set the baud rate, word length, parity, and stop bit length of the RS-232C interface.

Setting the baud rate

1 Press the STOP and DISPLAY keys simultaneously.
A menu function appears.

2 Press the DISPLAY key until the baud rate setting menu appears.

3 Press the NEXT or PREVIOUS key to select the baud rate.

1200 baud: 1200 baud rate
2400 baud: 2400 baud rate
4800 baud: 4800 baud rate
9600 baud: 9600 baud rate

4 Press the PLAY/PAUSE key to enter the selected setting.

5 To continue with another menu function, press the DISPLAY key until the function appears.
To cancel the menu, press the STOP key.

Setting the word length

1 Press the STOP and DISPLAY keys simultaneously.
A menu function appears.

2 Press the DISPLAY key until the word length setting menu appears.

3 Press the NEXT or PREVIOUS key to select the word length.

Length 7 bits: 7-bit word length
Length 8 bits: 8-bit word length

4 Press the PLAY/PAUSE key to enter the selected setting.

5 To continue with another menu function, press the DISPLAY key until the function appears.
To cancel the menu, press the STOP key.

Setting the parity

1 Press the STOP and DISPLAY keys simultaneously.
A menu function appears.

2 Press the DISPLAY key until the parity setting menu appears.

3 Press the NEXT or PREVIOUS key to set the parity.

Parity Off: Use no parity
Parity Even: Use even parity
Parity Odd: Use odd parity

4 Press the PLAY/PAUSE key to enter the selected setting.

5 To continue with another menu function, press the DISPLAY key until the function appears.
To cancel the menu, press the STOP key.

Setting the stop bit length

1 Press the STOP and DISPLAY keys simultaneously.
A menu function appears.

2 Press the DISPLAY key until the stop bit length setting menu appears.

3 Press the NEXT or PREVIOUS key to select the stop bit length.

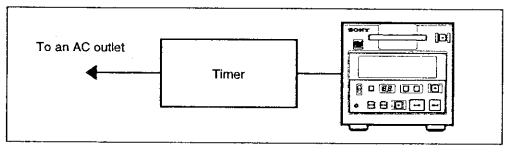
Stop bit 1: Selects a stop bit length 1
Stop bit 2: Selects a stop bit length 2

4 Press the PLAY/PAUSE to enter the selected setting.

5 To continue with another menu function, press the DISPLAY key until the function appears.
To cancel the menu, press the STOP key.

7-8 Setting Up for Timer-Activated Playback

When you set the MDS-B3 for timer-activated playback, the MDS-B3 automatically starts playback when the power is turned on. You can use this function for timer-activated playback of programs.



Connecting a timer

1 Press the STOP and DISPLAY keys simultaneously.
A menu function appears.

2 Press the DISPLAY key until the timer-activated playback setting menu appears.

3 Press the NEXT or PREVIOUS key to select the timer-activated playback setting.

T PLAY OFF: Timer-activated playback function is off.
T PLAY ON: Timer-activated playback function is on.
T PLAY RESUM: Timer-activated playback function is on and set for resume mode.
See page 7-12.

4 Press the PLAY/PAUSE key to enter the selected setting.

5 To continue with another menu function, press the DISPLAY key until the function appears.
To cancel the menu, press the STOP key.

Timer-activated playback of programs

1 Do the procedure above to set the MD recorder for timer-activated playback.

2 Create a program to be played by the timer-activated playback function.
For details on creating programs, see "5-6 Playing Back a Program (Program Play)" on page 5-12.

3 Turn the power off.
The MD recorder automatically starts playing the program the next time the power is turned on.

Notes

- Programs are saved in memory for about three days when the power is off.
- Timer-activated program playing is not possible when the resume mode (T PLAY RESUM) is selected.

Timer-activated playback in resume mode

When the MDS-B3 is set for timer-activated playback in resume mode (T PLAY RESUM), the starting position varies depending on the following conditions:

If the power is turned off in the middle of playback
The next time power is turned on, the MD recorder starts playing the track immediately after the one playing when the power was turned off.

If the power is turned off when the MD recorder is in playback pause at the start of a track
The next time power is turned on, the MD recorder resumes playback pause at the start of the same track.

The tables below show the variations in playback for different AUTO PAUSE or AUTO CUE settings.

When AUTO PAUSE or AUTO CUE is ON

Condition when the power is turned off	Condition when the power is turned on again
Playback pause at track number n	Playback pause at the start of track number n
Playback of track number n	Playback pause at the start of the track immediately after track number n

When both AUTO PAUSE and AUTO CUE are OFF

Condition when the power is turned off	Condition when the power is turned on again
Playback pause at track number n	Playback from the start of track number n
Playback of track number n	Playback from the start of the track immediately after track number n

Note

Resume mode settings are stored in memory for about three days when the power is off.

8-1 Cleaning the MD Recorder

Use a soft cloth slightly moistened with a mild detergent solution to clean the cabinet and panel surface. Do not use solvents that may damage the surface such as paint thinner, benzine, or alcohol.

8-2 Display Messages

The following table explains in the various messages that appear in the display window.

Message	Meaning
Blank Disc	A new (blank) or erased disc has been inserted.
Cannot EDIT ※	An attempt was made to edit the MD during program play, or the inserted disc contains Japanese ideograms.
Disc Error	The disc is abnormal (scratched or missing a TOC).
Disc Full ※	The disc is full.
Impossible ※	An attempt was made to combine tracks while playing back the first track.
Name Full ※	The titling capacity of the disc has reached its limit (about 1,792 characters).
No Disc	There is no disc in the unit.
No Track	The inserted disc has a disc title but no tracks.
Protected ※	The inserted disc is record-protected.
Retry ※	The first recording attempt failed due to a disturbance or scratch on the disc, and a second recording is being made.
Sorry ※	An attempt was made to combine tracks that cannot be combined.
TOC Reform? ※	The TOC has become almost full due to repeated editing operations. Press the ENTER/YES key to reform the TOC for a possible increase in recording time. Press the EDIT/NO key to bypass the reform process and turn off the message.

※ mark is the MDS-B3 only.